

▲ 14.9 Anxiety Disorders: Cognitive–Behavioral Therapy

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The focus of this section is on cognitive–behavioral therapy (CBT) for *pathological anxiety* or anxiety and avoidance that leads to significant impairment in functioning or substantial distress. The fourth revised edition of the American Psychiatric Association’s *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV-TR) specifies eight primary anxiety disorders: Phobias, panic disorder (with and without agoraphobia), agoraphobia without panic disorder, obsessive-compulsive disorder (OCD), social anxiety disorder, posttraumatic stress disorder (PTSD), acute stress disorder, and generalized anxiety disorder. Common to the anxiety disorders are the emotion of anxiety, cognitions related to present and future threat of harm (either physical or psychological), physiological responses when confronted with anxiety-relevant stimuli, and behavioral tendencies to escape from or avoid anxiety triggers and to prevent anticipated harm.

Each of the various anxiety disorders is distinguished from the others by the focus of the anxiety and specific symptoms. Panic attacks, for example, are discrete episodes of intense anxiety associated with at least four physiological symptoms (e.g., rapid heart rate, chest pain, cold chills, or hot flashes) and/or cognitive symptoms (e.g., thoughts that one is going to die, go crazy, or lose control) that may occur in up to 30 percent of the general population in a given year, yet only 2.7 percent of the population has diagnosable panic disorder over the same period. In addition to recurrent unexpected panic attacks, the diagnosis of panic disorder requires enduring anxiety about having another panic attack or concerns about the consequences of such attacks for one’s well-being (see cognitive symptoms). The central feature of panic disorder, therefore, is the fear of one’s own fight-or-flight reaction, or the “fear of fear.” Furthermore, agoraphobic avoidance typically develops in response to an individual’s attempt to avoid experiencing another panic attack.

Individuals with other psychiatric disorders can have panic attacks, but they are usually not afraid of the consequences of such attacks per se. For example, individuals with PTSD fear recollections and reminders of a previously experienced life-threatening event, such as physical or sexual assault, a severe accident, or combat. Although individuals with PTSD may experience panic attacks and often develop extensive behavioral avoidance, the panic tends to be cued by memories and reminders of the trauma, and the behavioral avoidance is designed to prevent activation of the trauma memory and prevent the occurrence of additional traumatic events. Thus, the focus is on the memory of the trauma and not on the panic attack per se. Similar conceptualizations can be made for social anxiety disorder, in which the focus is on the fear of embarrassment and rejection; obsessive-compulsive disorder, in which the fear is of an idiosyncratic concern (contamination, fire, being an evil or harmful person, etc.); generalized anxiety, in which the worry is about specific future outcomes; and specific phobia, in which the fear is circumscribed to a specific situation or object. In all of these cases, the focus is on the source of fear instead of on the panic itself (with the exception of panic disorder).

Anxiety disorders are common (up to 29 percent of people experience at least one in their lifetime) and frequently co-occur with other disorders, making them a significant mental health problem. Fortu-

nately, effective pharmacological and psychological treatments have been developed for all of the primary anxiety disorders. In fact, CBT has been endorsed as a first-line treatment for anxiety disorders by the United Kingdom’s National Institute of Health and Clinical Excellence, the American Psychiatric Association Treatment Guidelines, and a number of other health care and government agencies around the world. These guidelines have been influenced by research suggesting that CBT for anxiety disorders is more cost-effective than medication or other treatments in the long term. This section describes the theory and practice of CBT for anxiety disorders and reviews evidence of its efficacy.

EMOTIONAL PROCESSING THEORY: A PSYCHOLOGICAL MODEL OF ANXIETY DISORDERS AND THEIR TREATMENT

Before describing the components of CBT and its efficacy in the treatment of the various anxiety disorders, a general psychological model of anxiety disorders and the conditions theoretically necessary for successful treatment are presented. Emotional processing theory is based on the proposition that a cognitive *fear structure* that contains stimulus, response, and meaning information serves as a blueprint for avoiding or escaping from danger. Environmental stimuli activate matching information in the fear structure, resulting in the spreading of activation throughout the rest of the structure via associative connections, thereby recruiting prior memories of the feared stimulus and the physiological and behavioral responses associated with the fight-or-flight reaction. A fear structure is adaptive if the stimuli represented in it are objectively harmful and the responses represented in it lead to effectively avoiding, escaping, or coping with the threat. A fear structure is pathological, as occurs in anxiety disorders, when the associations among stimulus, response, and meaning representations do not accurately reflect reality, such that harmless stimuli or responses are erroneously interpreted as being dangerous. For example, the fear structure for a dog phobia would include associations among representations of dogs; meaning representations of dogs as being dangerous and uncontrollable; and responses such as physiological arousal and various defensive behaviors (e.g., calling for help, running away).

In contrast, the fear structure in panic disorder is characterized by fear of physical sensations associated with panic symptoms (e.g., rapid breathing, heart palpitations) and interpretation of these sensations as indications of danger, such as a heart attack or signs of going crazy. As a result of the erroneous meaning associated with these sensations, people with panic disorder avoid situations that will give rise to panic or cause similar sensations, such as intense physical activity. In PTSD, the fear structure involves associations among trauma-related harmful stimuli and similar but nonharmful stimuli, inaccurate interpretations of safe stimuli as dangerous (e.g., all men are rapists), and unhelpful interpretations of one’s reactions as indicators of being incompetent (e.g., “My symptoms mean I can’t cope with this”).

Emotional Processing

Emotional processing refers to changes in a pathological fear structure that result in long-term fear reduction and resolution of the anxiety disorder. According to emotional processing theory, two conditions are necessary for emotional processing to take place. First, the fear structure must be activated either through a match with stimuli in the environment (e.g., confronting the feared stimulus) or through symbolic means (e.g., imagining or thinking about the feared stimuli).

Second, new information that is *incompatible* with the pathological aspects of the fear structure must be available and incorporated into the structure, thereby altering the structure and creating a more realistic or “nonfear” structure via the new, competing associations.

Emotional processing theory was explicitly designed to explain the efficacy of exposure therapy in the treatment of anxiety. Exposure therapy involves helping patients to systematically confront feared but otherwise safe stimuli in a manner that promotes eventual fear reduction. The efficacy of exposure therapy in reducing anxiety has been widely demonstrated, and exposure procedures are a basic component of nearly every CBT program that has been shown to be effective in the treatment of the various anxiety disorders. The relevance of emotional processing theory to other treatments for anxiety, specifically anxiety management training and cognitive therapy, is addressed later.

Recent elaborations of emotional processing theory specify two indicators of emotional processing that can be measured separately from treatment outcome. Following from the proposal that activation of the fear structure is necessary for change in the structure to occur, one indicator of emotional processing is sufficient emotional engagement, as reflected in facial reactions, self-reports of fear and anxiety, or physiological reactions such as increased skin conductance or heart rate when the person confronts or thinks about the feared stimulus. The second indicator of emotional processing is reduction in the levels of fear experienced across repeated sessions, or *between-session habituation*. Fear reduction obtained in one session that does not at least partially transfer to a subsequent session (i.e., the lack of between-session habituation) indicates that the fear structure was not altered and suggests that any previously observed fear reduction may have been brought about by some kind of compulsion, safety behavior, or other form of defensive maneuver. By contrast, fear reduction that does transfer across sessions strongly suggests that the previous experiences have led to some enduring change in the fear structure. Other indicators of between-session emotional processing may include reductions in fear-related cognitions or changes in biased cognitive processes such as reductions in the investment of attentional resources to threat stimuli or decreased negative and/or increased positive interpretations of ambiguous situations.

Earlier formulations of emotional processing theory included a third indicator of emotional processing: Gradual reduction in these indexes of emotional reactivity to the feared situation over the course of an exposure exercise. In the context of exposure therapy, this is called *within-session habituation*. However, acute fear reduction can occur for reasons other than habituation, such as distraction or engaging in compulsions or other safety behaviors. Such measures limit emotional engagement and prevent the encoding of disconfirming information, thereby preventing therapeutic changes from taking place in the fear structure. For example, if a person with OCD who fears contamination touches a public toilet, thus activating the fear structure, but then immediately washes to prevent contracting an illness, he or she will not have the opportunity to learn that simply touching a toilet seat will not lead to a fatal disease. Given the potential unreliability of this indicator, revisions of emotional processing theory suggest the within-session habituation, although a possible indicator, is neither necessary nor sufficient.

Several studies conducted across a range of disorders, including specific phobias, OCD, and PTSD, investigated the relationship between indicators of emotional processing and treatment outcome of exposure therapy. Many of these studies showed a relationship between initial activation and long-term outcome and also between changes in either cognition or fear between sessions and outcome. The relationship between within-session changes in fear or cognition and outcome were less consistent.

Sources of Corrective Information and Conditions That Interfere with Emotional Processing

It is relatively easy to see how exposure therapy promotes emotional engagement as patients are helped to think and talk about feared thoughts, images, and memories; to confront feared things and situations; and to engage in feared activities. It may not be as easy to

see what sources of corrective or fear-disconfirming information is contained in an exposure exercise.

One important source of corrective information is within-session habituation, which provides new response and meaning information about the *reduction* of physiological responding in the presence of feared stimuli that is incompatible with prior response information and the incorporation of nonthreat meaning related to this response. Take, for example, a patient with panic disorder; the experience of habituation disconfirms the common belief that anxiety will persist unless the person escapes the situation, and it corrects misperceptions that physiological responses associated with the fight-or-flight system are evidence of a heart attack or of going crazy.

Repeated and prolonged exposure may also provide corrective information regarding the actual likelihood or significance of feared consequences. Anxious people frequently overestimate the probability of feared events and the significance of those consequences, should they happen. For example, a person with OCD with obsessional fears related to illness may make an unrealistically high estimate of the probability of nausea, diarrhea, and vomiting as a result of eating certain foods (e.g., spicy foods, food prepared at a “greasy diner”). Repeated exposure allows the person to test whether the feared consequence happens. Moreover, even if it does happen—for example, the person feels nauseated or develops a case of diarrhea—the person has the opportunity to learn that these consequences, although unpleasant, are not catastrophic.

Exposure to intrusive and unwanted thoughts can help a person to distinguish between unpleasant thoughts that occur in his or her mind and reality or to separate thoughts from overt actions. For example, some individuals with OCD experience intrusive images of inflicting harm on people around them and are afraid they will act on these images by attacking someone. Exposure therapy allows these individuals to learn that they can think these upsetting thoughts without acting on them. In cases of PTSD, individuals may experience the memory of the trauma as if it were the same as actually reexperiencing the trauma. However, no matter how severe the trauma was or how distressing the memory may be, it is not physically harmful. Exposure to the trauma memory can help the person to differentiate between a past event that was objectively threatening or harmful in some way and the current safe experience of remembering the trauma.

Explicit provision of corrective information can also be extremely important and facilitate new associations within a fear structure. For example, psychoeducation about the causes and consequences of panic attacks can substantially reduce anxiety and panic attacks in approximately 30 percent of patients with panic disorder. This education includes corrective information regarding the likelihood of fainting from panic attacks (which is close to zero in individuals without blood-injection phobias) and distinguishing heart attacks and strokes from panic attacks, and a description of the biopsychosocial model of panic. On the other hand, many individuals require more-experiential exercises to incorporate such information. For example, individuals with social anxiety disorder can benefit significantly from provision of video and confederate feedback after an exposure to make explicit some of the corrective information that would otherwise not be observed. At times, within-session habituation does not occur in these circumstances, but between-session habituation does, making the latter a more reliable indicator of emotional processing than the former.

Failures of Emotional Processing

If repeated exposure to feared stimuli contains corrective or fear-disconfirming information, then why do most anxiety disorders have a chronic course? An important feature of all anxiety disorders, in

addition to the experience of intense distress on exposure to feared stimuli, is a strong tendency to escape from feared situations or avoid them altogether. To the extent that such escape and avoidance strategies are effective at reducing anxiety, they are strengthened through the principle of negative reinforcement, making it even more likely that the person will engage in escape or avoidance in the future. At the same time, successful escape or avoidance limits the person's exposure to fear-disconfirming information. For example, a person who is afraid of and successfully avoids dogs, even friendly dogs, will not have the opportunity to learn that dogs can not only be safe but also fun to play with, and thus he or she will maintain the belief that avoiding dogs has prevented harm from occurring.

Two procedures studied in the context of exposure therapy that have been found to promote acute reductions in distress while in the presence of feared stimuli but that interfere with between-session habituation are distraction and the use of benzodiazepine medications. Several studies investigated the effects of distraction on exposure. These studies differed substantially in how distraction was manipulated, the population that was studied, and the duration of the exposure sessions, which may account for some of the variability in results across studies. Overall, the studies showed that, under some circumstances, distraction can produce acute reductions in anxiety, but that such reductions may be at the expense of processing one's fears. Therefore, fear reduction obtained through distraction does not transfer to subsequent tests in the absence of the distraction strategy. Not only does fear reduction via distraction appear to not promote between-session fear reduction, distraction techniques can interfere with between-session habituation.

When taken shortly before exposure to a feared stimulus, benzodiazepines can significantly reduce anxiety. As with distraction, however, the fear reduction that occurs with the medication does not transfer to subsequent tests in a nonmedicated condition and, indeed, appears to interfere with the normal process of between-session habituation. Frank Wilhelm and Walton T. Roth demonstrated this among a group of patients undergoing treatment for the fear of flying that involved taking two flights scheduled 1 week apart. Ninety minutes before taking the first flight, half of the patients took the high-potency benzodiazepine alprazolam (Xanax), and the remaining patients took a placebo. Patients taking the active medication reported significantly less anxiety during the first trip than patients who took the placebo. Before the second trip, all patients were given a placebo pill. Patients who had taken the placebo before the first flight showed a reduction in their anxiety on the second flight, whereas those who had taken the active medication showed an increase in anxiety on the second flight.

COGNITIVE–BEHAVIORAL THERAPY PROCEDURES FOR ANXIETY DISORDERS

Most CBT programs for anxiety disorders begin with an assessment, patient education, and specific treatment planning. The actual treatment procedures involve at least one of four components: (1) exposure to thoughts, objects, situations, and physiological sensations that are not dangerous but are nonetheless feared, avoided, or endured with great distress; (2) training in general anxiety or stress management techniques; (3) use of cognitive therapy techniques; and (4) training in specific skills, such as dating skills, assertiveness, and so forth.

Assessment, Psychoeducation, and Treatment Planning

CBT begins with a thorough assessment of the patient's presenting complaints, using empirically validated assessment procedures. Self-

report and interviewer rating measures have been developed for the diagnosis and assessment of severity for each anxiety disorder. The assessment may also include measures of related psychopathology, such as depression and general anxiety, and specific theoretically relevant variables associated with the disorder of interest, such as trauma-related cognitions in PTSD and anxiety sensitivity in panic disorder. Typically, assessments are repeated over the course and at the end of treatment for the purpose of establishing a diagnosis, selecting treatment procedures, monitoring the process of treatment, and evaluating treatment outcome.

The next step of CBT is psychoeducation. Patients are typically provided with a cognitive–behavioral formulation of their specific diagnosis and a related treatment rationale that serves as a guiding framework for future treatment sessions. In addition, alternative treatments shown to have similar efficacy are discussed to allow the patient to make an informed choice about treatment.

As part of the initial assessment and patient education, the therapist and patient work together to identify specific targets for treatment and to work out the details of the treatment plan. An example of this is the development of a hierarchy for conducting in vivo exposure exercises. In addition, expectations are set that the patient will engage in homework between sessions to increase mastery of the therapy skills and self-monitoring procedures for symptoms.

Exposure Therapy

Exposure therapy involves intentionally confronting feared but otherwise not dangerous objects, situations, thoughts, memories, and physical sensations for the purpose of reducing fear reactions associated with the same or similar stimuli. Systematic desensitization was the first exposure therapy technique to undergo scientific investigation. Although an effective treatment for some anxiety disorders, it has generally fallen out of use among researchers and cognitive–behavioral therapists. The contemporary use of exposure therapy may be usefully divided into three classes of procedures: In vivo exposure, imaginal exposure, and interoceptive exposure.

Systematic Desensitization. Systematic desensitization requires initial training in progressive muscle relaxation and the development of one or more carefully constructed hierarchies of feared stimuli. Treatment then involves the pairing of mental images of the lowest items on the hierarchy with relaxation until the image can be held in mind without it producing significant distress. This process is then repeated with each item on the hierarchy. Although systematic desensitization has been found to be effective in the treatment of specific phobias and social anxiety, it is generally no longer used among contemporary cognitive–behavioral therapists and researchers. This is due to the convergence of two lines of research. First, studies of the systematic desensitization procedures failed to produce convincing evidence that the unique features of this procedure, related to Joseph Wolpe's theory of reciprocal inhibition, are necessary for good outcome. For example, treatment need not begin at the bottom of the hierarchy, and it is not necessary to pair the fear-relevant images with relaxation for fear reduction to occur. Indeed, rather than reducing anxiety, the primary role of relaxation procedures in the effects of systematic desensitization appears to be the enhancement of image vividness, thereby increasing physiological reactivity to the image. These results are contrary to the hypothesis that the efficacy of systematic desensitization is brought about by relaxation inhibiting anxiety but are consistent with the tenets of emotional processing theory.

Second, alternative procedures entailing repeated, prolonged exposure to stimuli of moderately high levels of anxiety, particularly in vivo, until the anxiety decreases without the use of any specific anxiety

management techniques were being developed. In particular, the prolonged exposure approach was found to have beneficial effects in the treatment of OCD and agoraphobia, two conditions that were minimally responsive to systematic desensitization. Subsequently, direct comparisons also found these more intense forms of exposure therapy to be as effective as or more effective than systematic desensitization in the treatment of simple phobias.

In Vivo Exposure. In vivo exposure involves helping patients directly to confront feared objects, activities, and situations. It is usually conducted in a graduated fashion according to a mutually agreed-on (between patient and therapist) hierarchy. For example, a hierarchy for a specific animal phobia, such as snakes or spiders, may begin with looking at pictures and other representations of the feared animal, followed by looking at the actual animal kept in a cage, first at a distance and then gradually moving closer. Depending on the animal, subsequent steps may involve touching and handling the animal, perhaps first while wearing a glove and then without the glove. These steps may be repeated across several different examples of the animal, differing in such dimensions as size and activity level.

In the case of OCD, in vivo exposure is explicitly combined with response prevention, in which the patient agrees to not engage in compulsions or rituals designed to reduce anxiety when exposed to an object that elicits obsessional fears or designed to control feared harmful consequences. For example, a person with fears of contamination may be asked to touch and use a variety of common objects such as door knobs, public phones, and public restrooms while intentionally refraining from washing or taking specific measures to limit the spread of contamination (e.g., using a tissue as a barrier between the skin and the contaminated object). In the case of PTSD, patients are asked to confront reminders of the traumatic event. However, because this disorder is the result of actually experiencing a traumatic event, the therapist needs to use good judgment in assessing whether trauma reminders are objectively safe. For example, victims of interpersonal crime (e.g., rape, physical assault) may have experienced their trauma in a relatively dangerous setting, such as an abandoned building late at night. Such realistically high-risk situations would not be a part of their treatment—rather, the goal would be to identify situations and activities that are objectively low risk but are nonetheless avoided or only tolerated with great distress. In the case of social anxiety disorder, individuals are asked to engage in conversations and other interpersonal situations. Recent evidence suggests that such exposures maximize the incorporation of corrective information by ensuring that patients with social anxiety make explicit, specific predictions prior to their exposures, focus their attention outward and drop safety behaviors during the exposure, and receive feedback from those they interacted with and by postexposure review of videotapes of the exposure. In the case of panic disorder, individuals expose themselves to situations in which they fear having panic attacks such as riding in elevators, waiting in line at a store, and so on. Generalized anxiety disorder does not have standard in vivo exposure as part of its treatment because there is not usually a specific source of fears.

Imaginal Exposure. Imaginal exposure typically involves having the patient close his or her eyes and imagine feared stimuli as vividly as possible. Imaginal exposure has two general uses. The primary use is to help patients to confront feared thoughts, images, and memories. For example, individuals with OCD may experience obsessional thoughts and images about causing harm to people they love. In addition, they may have fearful thoughts about long-term consequences of their current actions, such as contracting human immunodeficiency virus (HIV) from a public toilet seat. For these con-

ditions, imaginal exposure to these feared thoughts and consequences is used to promote habituation of emotional reactivity to the image, to decrease the belief in the likelihood that the event will occur, and to help the patient distinguish between thoughts of committing harm or contracting a serious illness and reality, in which they do not act on those thoughts or do not actually have the illness. In the case of PTSD, imaginal exposure is used to help the patient confront his or her memory of the traumatic event. Here again, the procedure promotes habituation to the memory and helps the patient to distinguish between the actual traumatic event, which was dangerous, and the current memory of the event, which, although distressing, is not harmful. In these cases, imaginal exposure also creates or organizes a coherent narrative, which may help the patient to cope with his or her fears.

A second use of imaginal exposure is in lieu of in vivo exposure when arranging direct contact with the feared situation is not safe or feasible or as a preparatory exercise to facilitate subsequent in vivo exposures. In these cases, the patient imagines confronting the feared object or engaging in the feared task. When the patient's level of anticipatory anxiety is reduced, in vivo exposure may be conducted with the actual feared object or task, assuming that it is both safe and available.

Interoceptive Exposure. Interoceptive exposure is the most recent form of exposure therapy to be introduced. This procedure is designed to induce feared physiological sensations under controlled circumstances. Interoceptive exposure exercises are most commonly used in the treatment of panic disorder and certain specific phobias, for example, the fear of vomiting, in which internal cues such as those associated with physiological arousal (e.g., rapid heart rate, dizziness, tingling in the finger tips) or gastric upset (e.g., after eating a spicy meal) elicit fear, anxiety, and further arousal.

A number of specific exercises have been developed to induce specific panic-like sensations. For example, hyperventilating produces shortness of breath, dizziness, and tingling in the fingers and around the mouth and can produce a sense of unreality. Breathing through a thin straw produces the sensation of not getting enough air. Spinning in a chair or spinning in place produces dizziness and, in some people, mild nausea. Other possible activities include aerobic exercise to induce rapid heart rate and shortness of breath, consuming mild stimulants (e.g., eating chocolate-covered espresso beans), or eating spicy foods. The goal is to find an activity that produces similar sensations to the ones that patients find unduly distressing and attempt to avoid (e.g., the core panic symptoms in panic disorder). As with other forms of exposure, the purposes for inducing these sensations are to promote habituation of fear in response to them (i.e., the fear of fear or anxiety sensitivity) and to distinguish these sensations, which are normal responses to the various exercises, from physiological sensations that may actually signal a significant health problem. By intentionally inducing these feared sensations, the patients are able to learn to dissociate the sensations from danger per se by learning that these sensations do not cause harm and also gain a sense of control and mastery over their anxiety by accepting it.

Anxiety Management and Stress Inoculation Training

Anxiety management training is a general approach to treating anxiety, of which Meichenbaum's stress inoculation training is one specific example. Emotions in general, and stress and anxiety in particular, reflect the activity of three loosely coupled and interacting "channels," or modes, of responding: Cognitive-phenomenological, physiological,

and behavioral. Stress inoculation training involves training patients in the application of specific skills and techniques designed to address each of these response modes in a flexible manner that is tailored to the individual's needs. For example, spiraling negative cognitions that often occur during times of stress may be interrupted by the use of thought stopping, in which the patient thinks the word "stop" in his or her mind while vividly imagining the word "stop" and then replaces it with positive or coping self-statements. The physiological manifestations of anxiety and stress (e.g., hyperventilation and its consequences, muscle tension, and gastric symptoms) may be addressed through training in diaphragmatic breathing and progressive muscle relaxation (e.g., Jacobson's "tense and relax") method). Changes in overt behavior are promoted through the use of role playing and covert rehearsal, in which patients practice new behaviors while executing other coping skills either with another person or in their mind. Exposure to feared situations either in vivo or in the imagination is frequently a part of stress inoculation training but is usually for the purpose of practicing new skills and is accompanied by the use of other coping skills.

From the perspective of emotional processing theory, stress inoculation training involves altering response information in the fear structure. These new responses are typically first learned in the relative safety of the therapist's office but are then applied in stressful or anxiety-producing situations. Thus, this new response information has the opportunity to be incorporated and thereby alter the fear structure. In addition, successful coping with fear and anxiety provides new meaning information related to personal competence that counters typical fear-related beliefs related to self-incompetence.

Cognitive Therapy

The basic assumption of cognitive therapy is that people's beliefs and appraisals of events and situations are at least as important in determining their emotional reactions as the actual events and situations. Problematic emotions such as anxiety are frequently the result of unrealistic and unhelpful beliefs about the world, the self, and others. The goal of cognitive therapy is to help patients to identify unhelpful cognitions and cognitive distortions (e.g., all-or-nothing thinking, overgeneralization, only considering evidence that is consistent with existing beliefs) and to modify them. Three of the most common traditional cognitive therapy procedures are (1) the use of Socratic dialogue, in which the therapist uses a series of questions to help the patient to identify and challenge unhelpful beliefs or to uncover evidence disconfirming fear-related beliefs; (2) the downward-arrow technique, in which the therapist helps to uncover deeper beliefs and meanings by repeatedly asking for greater clarification; and (3) the use of thought records, in which patients record automatic beliefs, list evidence for and against those beliefs, review potential cognitive errors that may be reflected in those beliefs, and then generate more realistic and helpful beliefs.

A fourth technique that is frequently used in the treatment of anxiety disorders is the behavioral experiment, which has features overlapping with in vivo exposure. The goal of a behavioral experiment is to test beliefs about the nature and probability of feared consequences under conditions that will optimize exposure to and the encoding of disconfirming information. For example, before conducting a behavioral experiment, the patient makes detailed predictions about what he or she believes will happen under a particular set of circumstances and then conducts the relevant experiment to see what happens. For example, a person with OCD who fears accidentally causing harm to others may be afraid that the normal use of a razor has a high probability of causing the blade to fall out and that the lost blade will

go unnoticed until an unsuspecting child finds it and gets injured. A behavioral experiment to test predictions about the likelihood of the razor blade falling out might involve throwing the razor blade a number of times and then checking to see if the blade is still present. Each time the razor is tossed without the blade falling out, the patient is confronted with evidence that disconfirms his or her beliefs about the probability that it will fall out. The conceptual emphasis in cognitive therapy on changing beliefs through exposure to disconfirming evidence is consistent with the tenets of emotional processing theory. The practical and empirical issues involve determining the best ways to accomplish this goal.

Interpersonal Skills Training

Research has suggested that individuals with social anxiety disorder, as well as those with other anxiety disorders, have interpersonal deficits that contribute to the maintenance of their anxiety and potentially negatively affect treatment. Thus, some people with anxiety lack important skills needed to interact effectively with others. Consequently, they experience fewer interpersonal rewards and more punishments, leading them to avoid social interactions when possible, thereby further limiting their ability to acquire effective social skills and decreasing their social support. Accordingly, comprehensive treatment for anxiety provides explicit training to help patients acquire and use appropriate social skills and thereby reverse the negative cycle when necessary. These skills include assertiveness training and training in initiating, maintaining, and ending conversations. In addition, some research groups have suggested adding more interpersonal components to CBT further to address interpersonal skills deficits.

EFFICACY OF COGNITIVE–BEHAVIORAL THERAPY

Phobias and Agoraphobia

The key features of phobias are the presence of persistent and intense fear and the avoidance of specific objects or situations that the individual recognizes as being excessive or unreasonable. If avoidance is not possible, the feared stimulus is endured with great distress. To qualify as a phobia, the fear and avoidance must significantly interfere with the person's social or occupational functioning or the person must experience marked distress about the fears. Although the range of phobic situations is potentially quite broad, the most common are animal phobias (e.g., dogs, insects), natural environment phobias (e.g., heights, storms, water), blood or injury phobias (including receiving or viewing injections), and situational phobias (e.g., bridges, flying, enclosed spaces). *Agoraphobia* is a pattern of pervasive avoidance of places and situations. If such places and situations cannot be avoided, then they are endured with great distress—the person with agoraphobia is afraid that he or she may experience a full-blown or symptom-limited panic attack and perceives that help is unavailable. Most of the time, agoraphobia is associated with panic disorder, and, therefore, its treatment will be addressed later along with that of panic disorder. Agoraphobia without panic typically involves fears of diarrhea or vomiting in public places due to anxiety. Common agoraphobic situations include being in various crowded public places (e.g., malls, restaurants, and theaters) and enclosed spaces (e.g., closets, elevators, and cars). Given the abundant evidence for the distinction of social phobia, or social anxiety disorder, from specific phobias, the former is considered in a separate section.

A large body of research beginning in the mid-1960s has clearly demonstrated the efficacy of several exposure therapy protocols in the

treatment of simple phobias and fear of public speaking. This research establishes exposure therapy as the treatment of choice for these conditions. The earliest studies focused on systematic desensitization. In the first controlled study, systematic desensitization was compared with a wait-list control condition in the treatment of students with a fear of snakes. In the first phase of the study, participants in the desensitization group separately practiced relaxation and created a hierarchy. In the second phase, participants in the desensitization group paired the feared images from the hierarchy with relaxation. Neither group showed any changes during the first phase, but the desensitization group showed significant improvement across the second phase, whereas the control group showed no change.

In a follow-up study, desensitization was found to be superior to a pseudotherapy that, like desensitization, included training in relaxation and hierarchy construction. After the initial preparation, participants in the desensitization group paired the feared images with relaxation, whereas the pseudotherapy group engaged in positive imagery during relaxation. Another study compared the efficacy of five sessions of systematic desensitization for the public speaking fears and other forms of social anxiety with wait-list and two alternative treatment conditions (insight-oriented psychotherapy and an attention-placebo condition in which subjects were given a placebo pill but told that it was a drug that reduced anxiety in stressful situations and then conducted a task that was said to be stressful but actually induced drowsiness). Results revealed that all three treatments were superior to wait-list and that systematic desensitization was superior to the alternative treatments, which did not differ from one another. This pattern of outcome was maintained for up to 2 years after the completion of treatment.

Research beginning in the 1970s began to investigate the “flooding” approach to imaginal and in vivo approaches, which involved repeated and prolonged exposure to fear cues of high intensity without including relaxation. Results from the earliest of these studies provided evidence for the efficacy of all three approaches (systematic desensitization, imaginal exposure, and in vivo exposure) but provided mixed results regarding the relative efficacy among the treatments. For example, a crossover study comparing desensitization and imaginal exposure found that the two treatments were equally effective in the treatment of specific phobias, but imaginal exposure was more effective in the treatment of agoraphobia. One group found that both systematic desensitization and imaginal exposure were more effective than a nonspecific treatment control condition among a mixed sample of patients with specific phobias and patients with agoraphobia. However, they did not replicate the finding of superiority of imaginal exposure over desensitization for agoraphobia.

A more consistent pattern of outcome in favor of a particular form of in vivo exposure, called *participant modeling* or *guided mastery*, over other forms of exposure therapy in the treatment of phobias and agoraphobia has been reported in series of studies by Albert Bandura and colleagues. In participant modeling, the therapist actively models handling the feared object for the patient and may use various “response induction aids” to help the patient successfully to handle the feared object. For example, in treating a patient with a spider phobia, the therapist may first demonstrate how to touch, handle, and control a tarantula. The therapist would then coach the patient in performing the same behaviors, first while wearing protective gloves and then without gloves. This active approach to in vivo exposure may be contrasted with more-passive approaches in which the patient may be instructed to sit and observe a snake in a cage and attempt contact with the object when their fear at the earlier step has decreased.

Systematic desensitization, prolonged imaginal exposure, and prolonged in vivo exposure have all been found to be effective in the treat-

ment of phobias. In addition, systematic desensitization and imaginal exposure may be of some limited effectiveness in treating agoraphobia. Prolonged in vivo exposure is at least as effective as, and often more effective than, desensitization and prolonged imaginal exposure. The participant modeling variation of in vivo exposure has been found to be particularly effective in treating a range of phobias, including small-animal phobias, acrophobia, and agoraphobia. Studies have also found virtual reality-based exposure therapy to be effective.

Obsessive-Compulsive Disorder

People with OCD have one or more obsessions or compulsions or both. *Obsessions* are recurrent thoughts, images, or impulses that are experienced as intrusive and unwanted and cause extreme distress. *Compulsions* are thoughts or behaviors that are usually carried out in response to an obsession or according to rigid rules, with the goal of reducing distress associated with an obsession or to prevent some feared consequence.

Exposure and Response Prevention. Although OCD was previously thought to be particularly resistant to treatment, one study in 1966 reported successful outcome in two cases of OCD with a combination of prolonged exposure to obsession-related cues and the prevention of compulsive rituals. Further success was reported in a series of 10 of 15 cases similarly treated, with only 2 cases of relapse over the course of a 5-year follow-up period. In 1996, E. B. Foa and M. J. Kozak summarized 13 studies that reported short-term outcome and 16 studies that reported long-term outcome for the use of exposure and response prevention in the treatment of OCD. Overall, 83 percent of subjects ($N = 330$) were classified as responders after 10 to 25 sessions ($N = 15$). After an average follow-up interval of 29 months, 76 percent of 376 subjects were classified as responders. Since then, a number of reviews and meta-analyses have attested to the efficacy of exposure and response prevention.

The efficacy and specificity of exposure and response prevention have been tested in a number of studies and found to be superior to placebo medication, relaxation, and anxiety management training. One study used a crossover design to investigate whether the separate components of exposure and response prevention have differential effects on obsessions and compulsions. Half of the participants received 2 weeks of treatment with exposure but no response prevention, followed by an additional 2 weeks of treatment with response prevention but no formal exposure. The remaining patients received the same treatments in reverse order. Results indicated that exposure produced greater reductions in fear during an in vivo test, whereas response prevention produced a greater reduction in the time spent engaged in compulsions. This finding was replicated in a study with a between-group design that found that the combination was superior to either component alone. Andrew Rabavilas and coworkers compared imaginal with in vivo exposure and found, contrary to studies of phobias and agoraphobia, that these two modalities produced comparable outcome. Foa and colleagues obtained a similar result.

Some studies have not found superiority of exposure and response prevention over medication; however, a recent study by Foa and colleagues found exposure and response prevention to be superior to the use of clomipramine. In addition, the combination of exposure and response prevention and medications did not show any superior effect. In addition, a recent study by H. Blair Simpson and colleagues found that individuals who were still symptomatic on at least 3 months of an optimal serotonin reuptake inhibitor were significantly improved by augmentation with exposure and response prevention compared to a

stress management control condition. In addition, some data suggest that after CBT, a good proportion of patients are able to discontinue medications, although systematic studies of this issue are lacking. Given accumulating evidence for multiple subtypes of OCD, it is important to note that studies have not found differences in outcome for exposure and response prevention across subtypes, with the exception of hoarding, which has been less responsive. Longer-term treatments are being developed to attempt to address the challenges of the treatment and maintenance of gains in hoarding.

Cognitive Therapy. Researchers have also investigated the efficacy of variations of cognitive therapy for the treatment of OCD and compared them with exposure and response prevention. Most studies comparing exposure and response prevention to cognitive therapy have found no differences between the treatments. One study found no advantage to adding cognitive therapy to exposure and response prevention, whereas another found that cognitive therapy with behavioral experiments was superior to exposure therapy in which only habituation was discussed. This suggests that both exposure and the discussion of consequences of behaviors (cognitive challenging) without ritualizing are important for treatment of OCD. There are a number of versions of cognitive therapy that have been tested in these treatments, including rationale emotive behavior therapy, Beckian cognitive therapy, and other cognitive therapies that are either tailored to addressing specific cognitive distortions commonly characterized by OCD or to specific symptom subtypes, such as thoughts about harm, sex, or religion. Clinically, it is important to ensure that one is not simply encouraging mental ritualizing or providing compulsive reassurance by engaging in cognitive challenging.

The combination of exposure and response prevention is the best-established psychological treatment for OCD. Imaginal exposure is used to help patients confront obsessional thoughts and feared consequences, whereas in vivo exposure is used to help patients confront feared objects, situations, and activities. Response prevention is used to decrease the frequency of compulsions and interrupt the cycle of negative reinforcement that serves to maintain the OCD. Optimal treatment includes both exposure and response prevention with incorporated discussion of faulty cognitions.

Posttraumatic Stress Disorder and Acute Stress Disorder

Acute stress disorder (ASD) and PTSD are reactions that may develop after exposure to an event involving physical harm or threat to life in which the person's response involved intense terror, horror, or helplessness. Both disorders are characterized by symptoms of re-experiencing the trauma (e.g., intrusive thoughts, nightmares), avoidance of trauma reminders and related thoughts and feelings, emotional numbing (e.g., loss of interest, feelings of detachment, restricted range of affect), and hyperarousal (e.g., difficulties sleeping and concentrating, exaggerated startle). In addition, the diagnosis of acute stress disorder requires the presence of dissociative symptoms (e.g., flashbacks, depersonalization, derealization). Acute stress disorder is diagnosable only within the first month after the trauma. For the diagnosis of PTSD, the symptoms must be present for at least 1 month. When the symptoms persist for 3 months or longer, the condition is designated as *chronic PTSD*.

Prospective longitudinal studies of a variety of traumatized populations indicate that high levels of PTSD symptoms along with general anxiety, depression, and disruption in social adjustment are common immediately after the traumatic event. Over the subsequent weeks and

months, however, the majority of individuals experience a pattern of natural recovery in which their symptom levels decline, most rapidly during the period immediately after the assault and more slowly thereafter. These same studies, however, also showed that a significant minority of trauma victims do not display this pattern of natural recovery, and some studies found that meeting criteria for ASD is a risk factor for chronic PTSD. For example, one prospective, longitudinal study of motor vehicle accident survivors found that 78 percent of people diagnosed with ASD in the month after the accident met full criteria for PTSD 6 months later.

Prevention of PTSD and Treatment of Acute Stress Disorder.

Six studies investigated brief (four or five sessions lasting 90 to 120 minutes each) CBT programs that were initiated within approximately 2 weeks of the traumatic event. In two studies, the primary inclusion criteria were meeting PTSD symptom criteria, whereas meeting full criteria for ASD was required in the remaining four studies. The kinds of traumatic events represented in the study samples included male and female survivors of physical and sexual assault, motor vehicle accidents, and industrial accidents. The most common CBT program in these studies involved a combination of training in anxiety management skills, imaginal exposure to the trauma memory, in vivo exposure to trauma reminders, and cognitive restructuring of trauma-related cognitions. CBT variations have also included only the exposure therapy components and the exposure therapy components plus hypnosis. The most common comparison condition in these has been supportive counseling, and two studies included assessment-only conditions.

Following treatment, between 8 and 38 percent of patients receiving CBT met criteria for PTSD, compared to 43 to 83 percent of patients receiving supportive counseling. At follow-up, typically 6 months after treatment, 11 to 23 percent of patients receiving CBT met criteria for PTSD, compared to 22 to 67 percent of those receiving supportive counseling. One study compared the full CBT program with just the exposure therapy components and found no difference between the two active treatments. Another study compared exposure therapy plus cognitive restructuring to the same program plus hypnosis implemented before in-session imaginal exposure exercises. Both active treatments were more effective than supportive counseling, and the addition of hypnosis resulted in slightly greater reduction of re-experiencing symptoms compared to CBT alone. Thus, CBT implemented shortly after a trauma may reduce the incidence of chronic PTSD approximately 6 months after the trauma compared to supportive counseling, and this finding has been replicated in a sample with mild traumatic brain injury. Longer-term follow-up data (3 to 4 years) have been reported for three of these studies. Among treatment completers who participated in follow-up, CBT continued to be associated with lower rates of PTSD (4 to 22 percent) than supportive counseling (25 to 63 percent), although not in the intention-to-treat samples (30 to 36 percent of those receiving CBT, compared to 33 to 67 percent of those receiving supportive counseling). An additional recent study found that two versions of CBT were both superior to medication (escitalopram) or pill placebo in the prevention of PTSD after traumatic events.

Treatment of Chronic PTSD. Several cognitive–behavioral approaches have demonstrated efficacy in the treatment of PTSD, including exposure therapy, stress inoculation training (a form of anxiety management training), cognitive therapy, and a more recently developed treatment called *eye movement desensitization and reprocessing*. In summary, studies have demonstrated the efficacy of all four of these treatments across a range of different trauma populations.

However, exposure therapy has received the most systematic investigation and is the only treatment that has been compared with all of the other treatment options. Indeed, a recent systematic review of 90 randomized controlled studies (37 of pharmacotherapy and 53 of psychotherapy) conducted by the Institute of Medicine of the National Academies noted that, “The committee finds that the evidence is sufficient to conclude the efficacy of exposure therapies in the treatment of PTSD” (p. 8). For all other treatments reviewed, both psychological and pharmacological, they concluded that the “evidence was inconclusive” for their efficacy in the treatment of PTSD. Therefore, exposure therapy is the best standard for comparison.

Exposure therapy for chronic PTSD typically combines imaginal exposure to the memory of the trauma with *in vivo* exposure to safe but otherwise avoided people, places, things, and activities that remind the survivor of the trauma and trigger intense negative emotional reactions. However, some researchers have used exposure interventions limited to imaginal exposure. In addition, some programs have focused on *in vivo* exposure as the primary treatment component, and others have combined exposure with significant elements of anxiety management training, cognitive therapy, or both. The superiority of variations of exposure therapy over several control conditions has been demonstrated for wait-list, supportive counseling, and relaxation. Moreover, the efficacy of variations of exposure therapy has been demonstrated in a range of populations, including male Vietnam War-era combat veterans, female victims of sexual and nonsexual assault, female survivors of abuse in childhood, female victims of domestic violence, male and female refugees, male and female survivors of motor vehicle accidents, and mixed-gender samples of a variety of traumatic events.

Two studies compared exposure therapy with stress inoculation training and wait-list. Both treatments in both studies were superior to wait-list, but neither treatment was significantly better than the other. Two studies compared exposure therapy with cognitive therapy and either wait-list or relaxation control groups. In both studies, active treatments were superior to control conditions, but neither treatment was superior to the other on measures of PTSD severity. A third study used an assessment-only run-in phase before randomly assigning patients to either imaginal exposure or cognitive therapy. Both treatments were associated with significant improvement, but there were no differences between groups. Three studies compared exposure therapy with eye movement desensitization and reprocessing and either wait-list or relaxation control groups. Two studies found that both treatments were superior to wait-list, with no significant differences between groups. In a 2003 study, exposure therapy, but not eye movement desensitization and reprocessing, was found to be superior to relaxation. Two additional studies compared exposure therapy with eye movement desensitization and reprocessing but did not include an additional control group. One used a run-in phase before randomly assigning patients to exposure plus stress inoculation training or eye movement desensitization and reprocessing. Both treatments were associated with significant improvement. The only posttreatment difference between treatments was that eye movement desensitization and reprocessing produced greater improvement on re-experiencing symptoms. In the second study, patients were randomly assigned to either exposure therapy or eye movement desensitization and reprocessing. Both treatments were associated with improvement, but there were no differences between the treatments.

Three studies compared exposure therapy (imaginal plus *in vivo*) alone with exposure therapy combined with either stress inoculation training or cognitive therapy and either wait-list or relaxation control groups. In all three studies, both active treatments were superior to controls, but there were no significant differences between treatments. In a fourth study, patients were randomly assigned to either exposure therapy alone or exposure therapy plus cognitive therapy. Both treatments were associated with improvement, but there were no differences between groups. A fifth study compared imaginal exposure alone to imaginal exposure plus cognitive therapy or supportive counseling. This was the only study to find an effect of augmenting exposure

therapy with the additional intervention. The elimination of *in vivo* exposure from the protocols is important to note because there is independent evidence that *in vivo* exposure adds to treatment outcome over imaginal exposure alone.

Several CBTs have been evaluated for the treatment of PTSD, including exposure therapy, anxiety management training, cognitive therapy, combinations of the preceding components, and eye movement desensitization and reprocessing. All treatments have been found to be more effective than wait-list or some kind of minimal treatment control condition such as relaxation or supportive counseling. Direct comparisons between active treatments have generally found comparable results for the different interventions, and studies evaluating the effects of combining treatments have not found evidence for superiority of combined treatments over the individual components. One exception to this generalization is that imaginal exposure plus *in vivo* exposure or imaginal exposure plus cognitive restructuring appear to be more effective than imaginal exposure alone. Studies of treatment for acute traumatic stress reactions and the prevention of chronic PTSD have yielded a similar pattern of results. Specifically, exposure therapy, with and without training in anxiety management techniques, is superior to wait-list. However, combined treatment is not superior to exposure therapy alone.

Two studies directly compared CBT with medication in the treatment of PTSD. The first study found significant and similar improvement from pre- to posttreatment for a CBT program that combined exposure therapy with anxiety management training compared to paroxetine, one of two medications with U.S. Food and Drug Administration (FDA) indication for PTSD (the other being sertraline). However, no placebo group was included for comparison to establish the efficacy of medication in the study sample. In the second study, eye movement desensitization and reprocessing was compared with fluoxetine and placebo. All three treatments were associated with significant improvement, and eye movement desensitization and reprocessing was superior to placebo in the completers sample, with a similar trend for the intention-to-treat sample. However, fluoxetine was not superior to placebo. A third study investigated the use of exposure therapy to augment sertraline. All patients received 10 weeks of treatment with sertraline followed by randomization to either 5 additional weeks of sertraline alone or 5 weeks of sertraline plus ten twice-weekly sessions of exposure therapy. Results indicated that 10 weeks of treatment with sertraline was associated with improvement, and treatment gains were maintained with 5 additional weeks of medication, whereas the addition of exposure therapy resulted in further improvement. This latter effect was particularly pronounced when the analyses were restricted to those patients who showed only partial response to the initial 10 weeks of sertraline.

Panic Disorder

A panic attack is a sudden, intense rush of fear, anxiety, or impending doom that reaches a peak very quickly and is associated with at least 4 of 13 physical and cognitive symptoms (e.g., shortness of breath, dizziness, heart palpitations, fear of dying, fear of going crazy or losing control). Panic attacks may be cued by a specific situation, as when someone who is afraid of snakes encounters one, or they may be unexpected and perceived by the individual as coming out of the blue. For the diagnosis of panic disorder, a person must experience repeated unexpected panic attacks that result in persisting (at least 1 month) concerns about having additional attacks or worries about the physical or psychological consequences of the attack (e.g., having a heart attack, going crazy).

According to the cognitive–behavioral model of panic disorder, a consequence of experiencing unexpected panic attacks for some individuals is the development of a vicious cycle. The cycle begins with hypervigilance for somatic cues indicative of a panic attack that, if detected, are interpreted negatively (e.g., as an indicator of having a heart attack or going crazy). The negative interpretation of somatic sensations results in increased anxiety and arousal, spiraling into a panic attack. Agoraphobic avoidance may also develop as an attempt to avoid experiencing panic attacks in situations in which help may not be available. Cognitive–behavioral treatments based on this model contain several components: (1) psychoeducation regarding the cognitive–behavioral model of panic disorder, (2) cognitive restructuring to challenge catastrophic cognitions about the likelihood and significance of panic attacks, (3) interoceptive exposure to feared somatic sensations to reduce the “fear of fear,” and (4) in vivo exposure to avoided cues, particularly in cases in which agoraphobic avoidance has developed. Relaxation and breathing retraining were early components of CBT protocols, but research has suggested that they are at best unnecessary and possibly lead to greater dropout or interference with treatment gains.

The efficacy of CBT programs based on this model has been demonstrated in a series of well-controlled studies. Between 41 and 87 percent of patients receiving CBT were panic free after treatment, compared to 36 percent receiving relaxation only, 50 percent receiving alprazolam, 20 percent receiving imipramine (Tofranil), 13 to 36 percent receiving placebo, and 30 to 33 percent undergoing wait-list. In the one study that combined imipramine with CBT, the combination treatment was found to be slightly more effective than CBT alone but not CBT combined with placebo. In this study, 6 months after treatment discontinuation, CBT alone and CBT plus placebo were superior to CBT plus imipramine, suggesting that medication may interfere with the maintenance of CBT gains after medication discontinuation. Several other research groups investigated variations of CBT, with similar results, replicating the superiority of CBT over relaxation, supportive counseling, and wait-list.

Several studies attempted to identify which components add to treatment outcome. Two studies found that adding cognitive restructuring to in vivo exposure substantially improved outcome, although other researchers have not been able to replicate this. Another study compared CBT consisting of education, cognitive restructuring, and interoceptive exposure with the same program plus relaxation and found that adding relaxation did not improve outcome. A 1997 study compared two treatments that incorporated cognitive restructuring and in vivo exposure. In addition, one included interoceptive exposure, and the other group substituted breathing retraining. Both treatments were associated with improvement, but the group receiving interoceptive exposure had superior outcome on panic frequency at posttreatment and follow-up assessments. In a study using a crossover design, patients were assigned to receive four sessions of cognitive therapy followed by four sessions of interoceptive exposure or the reverse. Both treatments were associated with improvement, and more improvement was observed for the first intervention administered, but there was no difference in the efficacy of the two components. An additional study examined compared cognitive therapy without interoceptive exposure to interoceptive exposure without cognitive therapy and found similar positive outcomes in both groups that were equivalent to other studies examining combined packages. Another study compared education, cognitive restructuring, and in vivo exposure with or without the inclusion of breathing retraining and found no reduction in treatment efficacy. Three variations of self-conducted exposure therapy—in vivo exposure, interoceptive exposure, and the combination of in vivo plus interoceptive exposure—were compared

with a wait-list control in another study. All three treatments were superior to the wait-list condition, but there were no significant differences among treatment conditions.

Treatment for panic disorder has largely consisted of multicomponent packages consisting of education about the cognitive–behavioral model of panic along with one or more of the following: Diaphragmatic breathing, relaxation, cognitive therapy, in vivo exposure, and interoceptive exposure. Dismantling studies have been partially successful in identifying the active ingredients, which seem to be cognitive restructuring combined with in vivo or interoceptive exposure. Indeed, the addition of interoceptive exposure may be particularly helpful. In a meta-analysis of 43 controlled studies of treatment for panic disorder, the largest mean effect size was obtained for the combination of cognitive therapy plus interoceptive exposure (.88), followed by CBT without interoceptive exposure (.68), CBT plus medication (.56), and medication alone (.47). Moreover, dropout rates from CBT were lower than dropout rates from medication conditions (alone or in combination with therapy). Another review by the Cochrane Collaboration found 21 trials comparing CBT to medications and their combination. Results suggested that combination treatment is superior to medication alone. Combination treatment also had superior symptom reduction to CBT alone in the acute phase, but also had more dropouts. After treatment discontinuation, no difference between CBT and combined treatment was found. Some trials showed that CBT for panic can also be helpful for treating medication-resistant patients, as well as for helping patients discontinue medications, including benzodiazepines and SSRIs. Recent trials also showed the ability to disseminate treatment for panic in community mental health clinics in addition to primary care. Other studies showed that CBT is effective for nocturnal panic, and that focused CBT on panic also significantly reduces comorbid conditions. In addition, a number of trials suggested the efficacy of group CBT treatment for panic disorder. Finally, some studies showed promising results for early intervention with CBT in individuals at risk for developing panic disorder.

Social Anxiety Disorder

Individuals with social anxiety disorder experience marked and persistent fear and avoidance of one or more social or performance situations. The person may fear doing or saying something embarrassing or fear manifesting the signs of anxiety (e.g., blushing, sweating, trembling) in such situations. Thus, social anxiety disorder can be conceptualized as a fear of embarrassment or fear of social rejection. Most individuals with social anxiety disorders fear and avoid multiple situations, falling within the generalized subtype of social anxiety disorder.

Treatments for social phobia have generally consisted of exposure therapy, cognitive therapy, the combination of exposure plus cognitive therapy, and social skills training. A meta-analysis summarized the outcome of 25 studies of treatments for social phobia, yielding 42 within-group effect sizes across four active treatments (exposure, cognitive therapy, exposure plus cognitive therapy, and social skills training) and two control conditions (wait-list and pill placebo). All active treatments were superior to wait-list, and there were no significant differences among active treatments. However, exposure plus cognitive therapy was the only condition found to be superior to placebo. The results of individual dismantling studies yield a similarly ambiguous picture. In the first such study, exposure alone was compared with exposure plus cognitive therapy. Although both groups improved, outcome was somewhat better for the combined treatment, particularly at the 3-month follow-up assessment. In a second study by the same group, the efficacy of each component alone, as well as

the combination of the two, was compared with a wait-list control group. Compared to the wait-list control group, all three treatments were found to be effective in reducing social anxiety. Again, however, outcome was best among subjects who received the combined treatment. By contrast, another study did not find evidence for superiority of combined treatment over exposure alone. On some measures, patients who received exposure only had numerically better outcome than those who received the combined program.

One particular treatment program that has received considerable research attention is Richard Heimberg's cognitive-behavioral group therapy (CBGT), consisting of in-session exposure to feared social situations and cognitive restructuring and corresponding homework. The group format not only serves to make treatment more affordable, it is believed that group treatment provides a great resource for conducting exposures, obtaining feedback, and learning vicariously. One study found CBGT to be superior to wait-list, and three studies found CBGT to be superior to a group attention control condition, in which patients received education about social anxiety and nondirective group therapy. Heimberg and colleagues also compared CBGT with phenelzine (Nardil) and placebo. Although there were no differences between CBGT and phenelzine immediately after treatment, there were more instances of relapse for patients receiving phenelzine during the 6-month follow-up. Another study also compared CBGT with the same treatment components administered individually and found the two methods to be comparable. One of the largest randomized trials found that group CBT including social skills training yielded similar outcomes to fluoxetine and the combination of fluoxetine plus CBT, and all of these treatments were superior to placebo.

The most promising results have come from a newer version of CBT developed by David M. Clark and colleagues. Four randomized studies have been published, showing large effects compared to fluoxetine, exposure alone, and group CBT (although not CBGT). Recent data support the efficacy of this treatment in a fee-for-service clinic. Some differences between the newer program and other CBT for social anxiety include a stronger emphasis on identifying and eliminating safety behaviors and shifting attention outward from the self. In addition, exposures are integrated carefully with cognitive challenging in the context of making specific predictions and evaluating these predictions post hoc with feedback from multiple sources, including videotape and those with whom the patient interacted during the exposure.

Generalized Anxiety Disorder

The key feature of generalized anxiety disorder is the presence of excessive worry accompanied by anxiety and physiological symptoms of tension, irritability, and sleep disturbance. The content of the worry must encompass a range of domains (e.g., school or work performance, personal finances) and not be limited to features of another specific disorder, such as worrying about having a panic attack (as in panic disorder). The worry, anxiety, and arousal symptoms must be present more days than not over a minimum period of 6 months. Pathological worry, as occurs in generalized anxiety disorder, is distinguished from normal worry, in that the frequency, intensity, and duration of the worry in addition to the attendant anxiety greatly exceed the actual probability or impact of the feared event and that the worry is experienced as difficult to control.

CBT packages for generalized anxiety disorder have typically included training in relaxation and cognitive therapy. In addition, some packages have included some form of exposure therapy to the worry content and problem solving. Relaxation alone, cognitive therapy alone, and their combination (with and without the further addition of

exposure) have all been found to be effective in reducing worry and anxiety compared to wait-list. In addition, CBT has been shown to be more effective than supportive control conditions. A recent meta-analysis found that CBT and relaxation did not yield different results for GAD. A number of meta-analyses and reviews have found CBT to be superior to wait-list and placebo conditions. One meta-analysis found that CBT effects were somewhat smaller than those for medications. The general results of these trials have been positive, but there is a general consensus that improvements in treatment efficacy are necessary, perhaps more than in CBT for the other anxiety disorders. A number of attempts have been made to improve treatment outcomes for GAD. One study added more treatment sessions for individuals predicted to have poorer outcome, with nonsignificant improvement in outcome compared to standard treatment. Others attempted to modify or add to existing models of CBT. Refinement of the CBT model includes a greater focus on meta-worry (worry about worry) or a greater focus on the intolerance of uncertainty and the separation of worry into worry about current problems (addressed by problem solving) and worry about future unknown events (addressed by increasing skills in tolerating uncertainty, including imaginal exposure). Additional areas and techniques to integrate with current CBT models include interpersonal treatment strategies, emotion regulation strategies, mindfulness and experiential avoidance strategies, additional focus on achieving positive-well being, and schema-focused treatments. It is too early to tell whether any of these techniques provides improved outcome compared to standard CBT packages.

FUTURE DIRECTIONS

The foregoing literature review demonstrates the efficacy of CBT programs in the treatment of anxiety across the full range of anxiety disorders. These treatments appear to be effective in children, adolescents, adults, and geriatric populations. Exposure in vivo to feared but otherwise safe stimuli and imaginal exposure to unwanted and upsetting thoughts are essential components of most CBT programs for anxiety. The cessation of safety behaviors or other subtle avoidance behaviors is essential for the anxiety disorders, as is explicit ritual prevention for optimal outcome in the treatment of OCD. The addition of interoceptive exposure appears to make a significant contribution to the treatment of panic disorder. Exposure alone or exposure with response prevention has been shown to be helpful as a stand-alone treatment for all of the anxiety disorders. In addition, exposure is typically conducted in the presence of cognitive challenging or discussions, helping the patient to learn corrective information. Anxiety management training and cognitive therapy have also been shown to be effective in the treatment of PTSD and GAD. Cognitive therapy that includes behavioral experiments, which inherently involves at least limited in vivo exposure, is also an effective treatment for OCD, panic disorder, and social anxiety disorder.

Several researchers have demonstrated the efficacy of multicomponent CBT packages that include components of anxiety management, cognitive therapy, and exposure. However, few of the relevant dismantling studies showed significantly improved outcome for these combined treatments as compared to the individual components. This may, to some extent, reflect low statistical power to detect the additive effects of treatments that individually are effective. Consistent with this hypothesis, meta-analyses have sometimes detected evidence for the superiority of combined treatments (typically of cognitive therapy plus exposure) that were not as evident in individual studies. Overall, it seems that the integration of cognitive techniques into exposures is the best method for optimizing treatment outcome. Whereas exposure without discussion of cognitions or beliefs (i.e., a habituation model)

changes cognitions, integrated treatment in which one facilitates exposures that maximize opportunities for the correction of erroneous associations by matching the patient's fears carefully and providing corrective information via these experiences is likely to lead to the best outcomes. The need for relaxation or similar coping or management strategies seems questionable.

Regarding the execution of these specific techniques, it is important to note that some studies suggested that therapists can differ in outcomes when using the same techniques, and some studies showed that expert sites are more effective in delivering the same techniques than other sites (although this literature also includes data to suggest that some nonexpert sites can obtain similar effects for some treatments). When therapist or site differences occur, it is due to two aspects of treatment delivery that likely interact. First, expert execution of these techniques typically requires experience and competence in formulating and articulating the treatment rationale (i.e., creating a flexible hierarchy that targets core fears, determining the proper focus of imaginal exposures, etc.), addressing the many overt and covert avoidance behaviors effectively, and knowing how to push exposures to their optimal level. In addition, even though formation of the therapeutic alliance, warmth, empathy, and other nonspecific therapeutic skills are not the central focus of the treatments, they are still important components that likely interact with the focused treatment techniques, facilitating compliance and better outcome. Having the nonspecific characteristics without the expertise in technique is insufficient for provision of optimal treatment. Therefore, when experts are not available, it is essential to monitor patient progress carefully (also true when experts are available), and if there is not progress after ten sessions of treatment, referral to an expert out of one's locale may be warranted.

Despite the success of CBT in the treatment of anxiety disorders, it is important to acknowledge two limitations. First, not everyone is responsive to treatment, and many people judged to have responded to treatment continue to experience significant residual symptoms. Thus, one avenue for future research is to identify ways to enhance existing treatments or to develop new treatments that are more effective. As noted, however, attempts to augment one psychological component with another treatment have not generally been very successful at significantly enhancing treatment outcome. Some of the recent improvements in outcome appear to be due to techniques that are developed based on specific maintenance mechanisms identified in studies on experimental psychopathology. It is possible that continued study and improvement in understanding the psychological mechanisms involved in each of the anxiety disorders will help to improve outcome.

In addition to better understanding psychological mechanisms for treatment outcome, understanding the neurobiological mechanisms of exposure and cognitive techniques may also help improve outcomes. In fact, D-cycloserine has been shown to facilitate the consolidation of extinction learning in rats, and four studies suggested at least faster outcomes in patients receiving D-cycloserine during exposure therapy (in acrophobia, spider phobia, social anxiety, and OCD). However, two studies found no advantage versus placebo (one in sub-clinical spider phobia and one in OCD), and another did not find D-cycloserine to facilitate extinction to experimentally induced negative associations. Thus, more research is needed in this potentially exciting area.

Another approach to potentially improving outcome is to combine psychotherapy with standard types of pharmacotherapy. This section did not provide coverage of the many studies that have investigated the efficacy of combining medication and CBT. Foa and colleagues reviewed all of the studies that met basic methodological standards (e.g.,

clearly established diagnosis, reliable and valid assessment measures, randomization) and provided an unambiguous test of the hypothesis that combined treatment would be superior monotherapy. They concluded that, at present, there is no clear evidence that adding medication to CBT improves treatment outcome for OCD, social anxiety disorder, or generalized anxiety disorder. Although combined treatment appeared to have slightly better immediate outcome for panic disorder, it was associated with greater relapse on discontinuation of treatment. There are no published studies on the effect of adding medication to CBT in the treatment of acute stress disorder or PTSD. Most studies of combined treatments, whether combining two forms of CBT or combining CBT with medication, implemented both treatments simultaneously. This strategy may actually serve to minimize the ability to detect the effects of combined treatments when the individual treatments are generally effective. An alternative strategy would be to use an augmentation strategy, in which partial responders to one active treatment are then randomized to continue with the original treatment alone or to add a second treatment.

The second limitation of CBT is its relative inaccessibility to people who do not live in large cities or near a university-based medical school or graduate program in clinical psychology. Greater research is needed to determine the factors that limit the use of CBT among community-based clinicians and the development of models for the dissemination of these treatments to make them more widely available. Some advancements in this area include using virtual reality to assist therapists conducting exposures in their offices, using self-help and stepped care approaches to treatment, and using Internet-based interventions.

SUGGESTED CROSS-REFERENCES

Other psychotherapies are of use in dealing with anxiety disorders. The reader is referred to Section 30.5 on group psychotherapy and combined individual and group therapy; Section 30.8 on interpersonal therapy; Section 30.1 on psychoanalysis and psychoanalytic psychotherapy; Section 30.10 on intensive short-term psychotherapy; and Section 30.13 on combined psychotherapy and psychopharmacology.

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